

The background is a dark, monochromatic collage. It features a calendar with dates like 1985, 1990, 1995, 2000, 2020, and 2040. A suspension bridge is visible in the upper right. In the lower right, there is a close-up of a clock face. In the lower left, two construction workers wearing hard hats and safety glasses are looking towards the right.

Proven Chemical Engineering Solutions for the Effective Year-Round Rehabilitation of Bridge Decks

Waterproofing & Polymer Overlay Technology

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Climatic Factors:

- Freeze/Thaw
- Precipitation (rain, snow, sleet & hail)
- Marine chlorides

Human Factors:

- Increasing ADTs/traffic loads
- De-icing salts, especially Magnesium Chloride
- Mechanical/Accidental Damage

Unchecked Consequences:

- Spalling concrete
- Rebar corrosion
- Increasing deck stress/fatigue
- costly repairs

Mitigating the Causes of Physical Deterioration

Surface Applied Chemical Engineering Methods:

- Bridge Deck Waterproofing – typically under asphaltic paving



Paving over spray applied MMA waterproofing on Carquinez Bridge

- Polymer Overlays



Polymer Overlay, Williamsburg Bridge, New York City

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Typical Physical Characteristics: Bridge Deck Waterproofing

Physical Properties	MMA	PU/Polyurea	Bituminous Sheet
Tensile Strength	High	High	Moderate
Elongation	High	Extremely High	High
Water Absorption	Very Low	Low	Moderate
Tear Strength	High	High	Moderate
Hardness	High	High	N/A
Cure Time	Fast	Very Fast	N/A



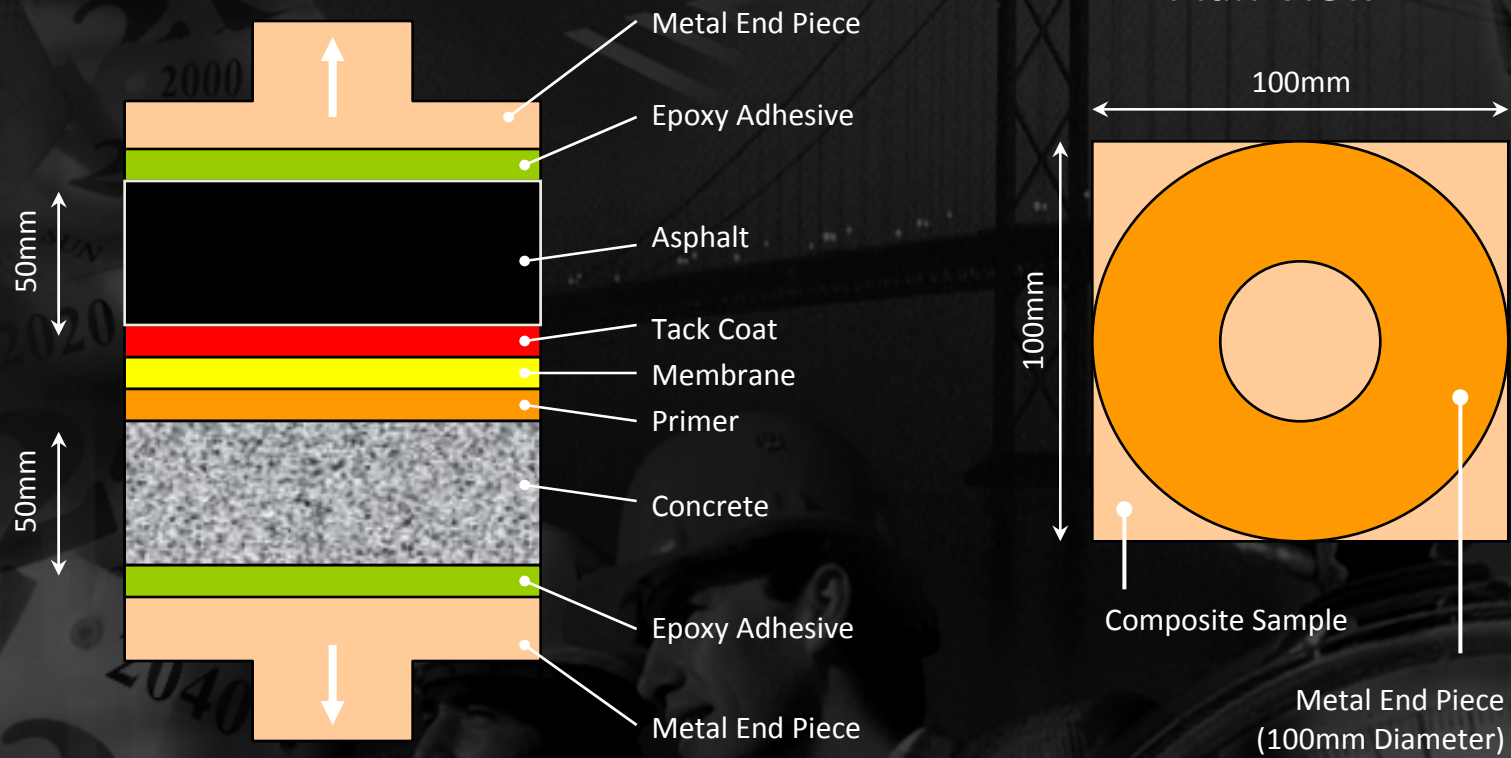
WET FILM THICKNESS TESTING

FREQUENCY: 1 PER 10M²

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Tensile Bond Strength Test: Deck–Membrane–Paving Composite





On-Site testing verifies paving adhesion values

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Polymer Overlays: Cost Effective, Rapidly Installed, Trafficable Surface Dressing

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Physical Characteristics: Polymer Overlays

Physical Characteristics	MMA	Epoxy	Urethane	Polysulphide
Tensile Strength	High	High	High	High
Elongation	Low	Low	Low	Low
Water Absorption	Low	Low	Low	Low
Hardness	High	High	High	High
Flexibility	High	Moderate	High	High
Cure Time	Fast	Moderate	Fast	Moderate



Waterproofing the Oresund Bridge between Denmark & Sweden at temperatures below freezing

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Value Engineering: unnecessary protection board is eliminated. Simplified & faster installation

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